US Army Medical Research and Materiel

Technology Available for Licensing

Hantavirus Vaccine

This invention provides vaccine formulations capable of inducing a protective immune response that is specific for Hantaviruses in humans. The formulations include an attenuated vaccinia virus vector containing cDNA molecules encoding the Hantavirus nucleocapsid N protein, and G1 and G2 glycoproteins. In monkey studies, the vaccine resulted in neutralizing antibodies being produced and seroconversion. A clinical trial protocol to determine safety and efficacy of the vaccine in humans has been proposed.

The Hantaan virus, the cause of Korean hemorrhagic fever, poses a significant health threat in much of Asia, especially in regions where high quality supportive care is not readily available. Non-pathogenic infection of rodent populations apparently provides a reservoir for the virus. Although a Hantavirus vaccine was used in South Korea, the production of this vaccine was not in compliance with the US Food and Drug Administration's guidelines. Other vaccines have been tested in Japan, North and South Korea, and the Peoples' Republic of China. They require growing the virus in animals or in tissue culture, which pose safety concerns.

The vaccine formulation provided in this invention is potentially suitable for use in humans. It is an excellent candidate for a number of reasons, including: (1) vaccinia possesses a high degree of physical and genetic stability, even under severe field conditions; (2) [illegible] stability makes the incorporation and expression of one or more foreign genes more feasible than in other systems; (3) effects on the host cell's physiologic functions are minimized because vaccinia replicates in the cytoplasm of host cells and uses its own DNA and RNA polymerases; (4) both humoral and [illegible] immunity are mediated by vaccinia virus-based vaccines; and (5) the duration of effectiveness of vaccinia immunization is relatively long.

Features and advantages:

- **Includes an attenuated vaccinia virus vector comprising a DNA molecule encoding the Hantaan virus N protein and G1 and G2 glycoproteins**
- **Formulation produced less severe reaction at injection site than FDA reference vaccine, in rabbits**
- **Studies demonstrated neutralizing antibody and seroconversion, after vaccination in monkeys**
- **Intradermal and subcutaneous administration was well tolerated, in monkeys**

Patent Status

Patent No.: 5,614,193
Issued: March 25, 1997

Available from: www.uspto.gov

Docket No.: RIID 87-04

Point of Contact

Dr. Paul C. Mele
Director, Office of Research and Technology Applications
USAMRMC, MCMR-ZA-J
504 Scott St., Ft. Detrick, MD 21702-5012
E-mail: usamrmcorta@amedd.army.mil
Voice: 301-619-6664/2032/7219 Fax: 301-619-5034

KEYWORDS: Hantaan; vaccine; cDNA; primate studies; vaccinia vector

Licensing Opportunities • Patent licenses are available to companies with commercial interests